

Heart Failure

CORONARY MICROVASCULAR REMODELING AND CORONARY FLOW RESERVE IN HEART TRANSPLANT PATIENTS: A CORRELATION STUDY OF PATHOLOGICAL AND CLINICAL FEATURES

Poster Contributions

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Background: Cardiac allograft vasculopathy (CAV) is the main limiting factor of long-term survival after heart transplantation (HT). CAV affects both epicardial coronary vessels and microvasculature. Coronary flow reserve (CFR) by transthoracic Doppler echocardiography (TDE) is an independent predictor of death in HT patients. We aimed to correlate the microvascular remodeling, as assessed by endomyocardial biopsy (EMB), with CFR by TDE in HT patients with normal coronary angiograms.

Methods: We studied 28 consecutive HT patients without angiographic CAV (25 male, aged 54 ± 10 years at HT, time from HT 7.5 ± 5 years). Coronary flow velocity in the left anterior descending coronary artery was detected by TDE at rest and during adenosine infusion. CFR was the ratio of hyperaemic diastolic flow velocity (DFV) to resting DFV. A $\text{CFR} \leq 2.5$ was considered abnormal. In the 1st year post-HT EMBs, myocytes diameter, fibrosis percentage, capillary density and microvascular remodeling (vessel media area/total vessel area ratio (%)) were evaluated by digital morphometry.

Results: CFR was abnormal in 11 (39.2%) patients. Microvascular remodeling was higher in patients with $\text{CFR} \leq 2.5$ compared with patients with $\text{CFR} > 2.5$ (72.3 ± 8 vs 65.2 ± 4.7 %, $p < 0.007$). Myocytes diameter, fibrosis percentage and capillary density were similar in the two groups. Male gender prevalence, gender donor-recipient mismatch, age at HT, time from HT, hypertension and diabetes prevalences, and other CAV risk factors were comparable in the two groups.

Conclusions: Our results suggest that coronary microvascular remodeling at EMBs may be the main predictor of abnormal CFR in HT patients. CFR by TDE may be an useful noninvasive tool in the evaluation of microvascular dysfunction/damage in HT. Further studies are warranted.